**PROJECT - 1**

## Public Safety and Crime Reporting Platform

## **Objectives:**

1. **Anonymity Crime Reporting**: Create a secure and anonymous platform where users can report crimes without fear of retaliation or exposure.
2. **Real-Time Communication**: Facilitate swift communication between users and nearby law enforcement agencies to ensure timely response to reported incidents.

## **Deliverables:**

1. **User Registration and Authentication**:
   1. Implement user registration and login functionality.
   2. Ensure secure authentication using JWT to protect user privacy.
2. **Crime Reporting**:
   1. Allow users to report crimes seamlessly, including details like location, time, and type.
   2. Securely store reported crimes in a dedicated MongoDB database.
3. **Auto Location Detection**:
   1. Automatically detect the user’s current location when submitting a crime report.
   2. Utilize geolocation services or APIs.
4. **Nearby Police Alert**:
   1. When a crime is reported, notify police officers within a **10 km radius**.
   2. Use real-time notifications or push alerts to notify police officers.
5. **Anonymous Reporting**:
   1. Ensure that user details remain anonymous.
   2. Do not store personally identifiable information.

## **Requirements:**

* **Node.js**: Install Node.js for server-side development.
* **MongoDB**: Set up a MongoDB database to store crime reports and user data.
* **Express.js**: Build the backend API using Express.js.
* **React.js**: Develop the frontend using React.js.
* **React Router**: Implement client-side routing.
* **Geolocation Services**: Integrate geolocation APIs for location detection.
* **JWT Authentication**: Secure user authentication.

## **Advanced Features:**

1. **Heat Maps and Crime Trends**:
   * Generate heat maps based on reported crimes to identify high-risk areas.
   * Analyze crime trends for better resource allocation.
2. **Emergency SOS Button**:
   * Include an SOS button for users to request immediate police assistance.
   * Trigger nearby police alerts when pressed.
3. **Multilingual Support**:
   * Provide language options for diverse user groups.

**PROJECT - 2**

**Custom Fashion Consultant**

## **Objectives:**

1. **Fashion Recommendations**: Develop a system that suggests personalized fashion choices to users based on their preferences, body type, and occasion.
2. **Enhanced User Experience**: Create an intuitive and visually appealing interface for users to interact with the stylist.
3. **Backend Integration**: Implement a robust backend to handle user profiles, clothing data, and recommendation algorithms.

## **Deliverables:**

1. **Web Application**:

* User-friendly interface for styling recommendations.
* User registration and login functionality.
* Profile management (uploading photos, specifying preferences).
* Display of personalized outfit suggestions.

## **Requirements:**

1. **Frontend**:

* **HTML/CSS/JavaScript**: Build responsive web pages.
* **React/Vue/Angular**: Choose a frontend framework for dynamic UI components.
* **User Authentication**: Implement secure login and registration.
* **Image Upload**: Allow users to upload photos of their clothing items.

1. **Backend**:

* **Node.js**: For a backend language.
* **Express/Django/Rails**: Set up the server.
* **Database (e.g., PostgreSQL, MongoDB)**: Store user profiles and clothing data.
* **Recommendation Algorithm**: Develop or integrate an AI model for fashion suggestions.

1. **Integration**:

* Connect frontend and backend using RESTful APIs.
* Handle image uploads and storage.

## **Advanced Features:**

1. **Style Transfer**:

* Apply neural style transfer to transform user photos into different artistic styles.
* Let users experiment with unique looks

1. **Seasonal Recommendations**:

* Factor in weather conditions and seasonal trends.
* Suggest appropriate clothing based on location,country and time of year.

1. **Social Sharing**:

* Enable users to share their styled outfits on social media.
* Enable users to find the perfect outfit as per recommendation from a popular Ecommerce website with various discount offers.
* Implement social authentication (e.g., sign in with Google/Facebook).

## **Evaluation Criteria:**

1. **Accuracy of Recommendations**:

* Measure how well the stylist predicts user preferences.
* Use metrics like precision, recall, or user feedback.

**PROJECT - 3**

**Home Security Notification**

**Objectives:**

1. **Enhance Home Safety and Security**:
   * Develop a system that provides real-time alerts to residents about potential threats (intrusion, fire, gas leaks, etc.).
   * Ensure residents feel secure within their homes.
2. **Efficient Communication**:
   * Enable seamless communication between the alert system and residents via notifications, SMS, or other channels.
   * Minimize response time during emergencies.

## **Deliverables:**

1. **Web Application**:
   * User-friendly interface for managing alerts and settings.
   * User registration, login, and profile management.
   * Integration with various alert components (sensors, detectors).
2. **Backend Services**:
   * Set up a reliable backend server to handle data storage, authentication, and communication.
   * APIs for frontend-backend interaction.
3. **Alert Components**:
   * Install and configure sensors (motion, smoke, gas, water leak) within the home.
   * Connect sensors to the system for real-time monitoring.

## **Requirements:**

1. **Frontend**:
   * **React/Vue/Angular**: Choose a frontend framework.
   * **User Authentication**: Implement secure login and registration.
   * **Dashboard**: Display alerts, sensor status, and user preferences.
   * **Notifications**: Set up push notifications for timely alerts.
2. **Backend**:
   * **Node.js/Python/Ruby**: Select a backend language.
   * **Express/Django/Rails**: Set up the server.
   * **Database (e.g., PostgreSQL, MongoDB)**: Store user profiles, sensor data, and alert history.
   * **APIs**: Create endpoints for frontend-backend communication.

## **Evaluation Criteria:**

1. **Reliability and Accuracy**:
   * Test sensor responsiveness and accuracy.
   * Evaluate false positives and negatives.
2. **User Experience**:
   * Gather user feedback on ease of use and effectiveness.
   * Monitor user engagement.
3. **Scalability**:
   * Ensure the system can handle multiple users and sensors.
   * Plan for future expansion.
4. **Security and Privacy**:
   * Protect user data and prevent unauthorized access.
   * Comply with privacy regulations.

**PROJECT - 4**

## Suggest Restaurants Based on Prompt

### **Objectives:**

1. **Provide Cuisine-Specific Recommendations**: Suggest nearby restaurants based on user-selected cuisines.
2. **Enhance User Experience**: Create an intuitive interface for users to discover new food options.

### **Deliverables:**

1. **Mobile Application**:
   * User-friendly interface for browsing restaurants.
   * User registration and login functionality.
   * Integration with location services.
2. **Backend Services**:
   * Set up a server to handle user requests and restaurant data.
   * APIs for communication between frontend and backend.

### **Requirements:**

1. **Frontend**:
   * **React Native/Flutter**: Choose a mobile app development framework.
   * **User Authentication**: Implement secure login and registration.
   * **Restaurant Listings**: Display nearby restaurants with cuisine filters.
   * **Location Services**: Access user location for personalized recommendations.
2. **Backend**:
   * **Node.js/Python/Ruby**: Select a backend language.
   * **Express/Django/Rails**: Set up the server.
   * **Database (e.g., PostgreSQL, MongoDB)**: Store restaurant details (name, address, cuisine).
   * **Google Maps API**: Retrieve nearby restaurant data.
3. **Restaurant Data**:
   * Collect restaurant information (name, address, cuisine type).
   * Populate the database with sample data.

### **Evaluation Criteria:**

1. **Accuracy of Recommendations**:
   * Measure how well the app suggests relevant restaurants.
   * Evaluate based on user feedback.
2. **User Engagement**:
   * Monitor active users, searches, and interactions.
   * Optimize the app for engagement.
3. **Performance**:
   * Ensure fast response times for restaurant queries.
   * Optimize backend services.

**PROJECT -5**

## **Customizable Mail System**

### **Objectives:**

1. **User-Friendly Email Interface**: Create an intuitive web application for composing, sending, and managing emails.
2. **Personalization**: Allow users to customize their email templates and signatures.

### **Deliverables:**

1. **Web Application**:
   * User-friendly interface for composing and reading emails.
   * User registration and login functionality.
   * Integration with email APIs (e.g., SendGrid, Nodemailer).
2. **Backend Services**:
   * Set up a server to handle email requests and user data.
   * APIs for communication between frontend and backend.

### **Requirements:**

1. **Frontend**:
   * **React**: Develop the front-end using React for a dynamic and interactive user interface.
   * **User Authentication**: Implement secure login and registration.
   * **Email Composition**: Create a form for composing emails.
   * **Email Listing**: Display a list of received emails.
2. **Backend**:
   * **Node.js/Express**: Set up the server using Express.js.
   * **MongoDB**: Store user profiles and email data.
   * **RESTful API**: Handle CRUD operations for emails.
3. **Email Integration**:
   * Use email APIs (e.g., SendGrid, Nodemailer) to send and receive emails.
   * Authenticate with SMTP servers.

### **Evaluation Criteria:**

1. **Functionality**:
   * Test email composition, sending, and receiving.
   * Ensure smooth user experience.
2. **Security**:
   * Protect user data and prevent unauthorized access.
   * Implement secure authentication.
3. **Performance**:
   * Optimize email delivery and retrieval.
   * Monitor server response times.

**PROJECT - 6**

## **Gaming Record Keeper**

### **Objectives:**

1. **Usage Tracking**: Record the time spent by users playing games.
2. **Parental Control**: Allow parents to set time limits and lock the app.

### **Deliverables:**

1. **Web Application**:
   * User-friendly interface for tracking game usage.
   * User registration and login functionality.
   * Parental control features.
2. **Backend Services**:
   * Set up a server to handle user requests and game data.
   * APIs for communication between frontend and backend.

### **Requirements:**

1. **Frontend**:
   * **React**: Develop the front-end using React for a dynamic UI.
   * **User Authentication**: Implement secure login and registration.
   * **Game Tracking Page**: Display game usage time and allow users to start/stop tracking.
   * **Parental Control Page**: Allow parents to set time limits and lock the app.
2. **Backend**:
   * **Node.js/Express**: Set up the server using Express.js.
   * **MongoDB**: Store user profiles, game data, and parental control settings.
   * **RESTful API**: Handle CRUD operations for game tracking.
3. **Game Tracking Logic**:
   * Use timestamps to calculate game usage time.
   * Store game sessions and total playtime.

### **Advanced Features:**

1. **Notifications**:
   * Send reminders to users when they approach their time limit.
   * Notify parents when the app is locked.
2. **Customizable Time Limits**:
   * Allow parents to set different time limits for weekdays and weekends.
   * Provide flexibility based on user preferences.
3. **Unlock Requests**:
   * Allow users to request additional playtime (with parental approval).
   * Send notifications to parents for approval.

### **Evaluation Criteria:**

1. **Accuracy of Tracking**:
   * Verify that game usage time is accurately recorded.
   * Test different scenarios (e.g., pausing, resuming).
2. **User Experience**:
   * Gather feedback on ease of use and effectiveness.
   * Ensure smooth transitions between tracking and parental control pages.
3. **Security and Privacy**:
   * Protect user data and prevent unauthorized access.
   * Implement secure authentication and authorization.

**PROJECT - 7**

## **Wilderness Camping web App**

### **Objectives:**

1. **Scenic Camping Recommendations**: Provide users with picturesque camping spots known for great views.
2. **Enhance Outdoor Experiences**: Offer features that make camping trips memorable and exciting.

### **Deliverables:**

1. **Mobile Application**:
   * User-friendly interface for discovering camping areas.
   * User registration and login functionality.
   * Integration with location services.
2. **Backend Services**:
   * Set up a server to handle user requests and camping data.
   * APIs for communication between frontend and backend.

### **Requirements:**

1. **Frontend**:
   * **React**: Choose a mobile app development framework.
   * **User Authentication**: Implement secure login and registration.
   * **Camping Spot Listings**: Display scenic camping areas with details (views, amenities, accessibility).
   * **Search and Filters**: Allow users to search by location, view type, and difficulty level.
2. **Backend**:
   * **Node.js/Express**: Set up the server using Express.js.
   * **MongoDB**: Store camping spot information (name, location, features).
   * **RESTful API**: Handle CRUD operations for camping spots.
3. **Camping Spot Data**:
   * Collect data on camping areas with stunning views.
   * Include details like elevation, nearby attractions, and trail difficulty.

### **Advanced Features:**

1. **User Reviews and Ratings**:
   * Enable users to rate and review camping spots.
   * Display average ratings and user comments.
2. **Weather Integration**:
   * Fetch real-time weather conditions for each camping area.
   * Warn users about adverse weather (storms, extreme temperatures).
3. **Trail Maps and Navigation**:
   * Provide maps with marked trails and viewpoints.
   * Integrate with GPS for navigation.
4. **Packing Checklist**:
   * Offer a checklist of essential items for camping trips.
   * Customize based on the chosen camping spot and season.

### **Evaluation Criteria:**

1. **Accuracy of Recommendations**:
   * Verify that suggested camping spots match their descriptions.
   * Test different search filters.
2. **User Engagement**:
   * Monitor user interactions (searches, spot views, reviews).
   * Optimize the app for engagement.
3. **Performance**:
   * Ensure fast response times for spot listings and weather updates.
   * Optimize backend services.

**PROJECT - 8**

## **ICC Players Analysis App**

### **Objectives:**

1. **Playing Ground Performance**: Provide insights into how batsmen perform on different playing grounds.
2. **Maximum Scores**: Display the highest individual scores for each batsman.
3. **Performance Against Specific Bowlers**: Analyze how batsmen fare against particular team bowlers.

### **Deliverables:**

1. **Web Application**:
   * User-friendly interface for analyzing batsmen.
   * Player profiles with relevant stats.
   * Customizable filters for specific analyses.
2. **Backend Services**:
   * Set up a server to handle user requests and player data.
   * APIs for communication between frontend and backend.

### **Requirements:**

1. **Frontend**:
   * **React**: Develop the front end using React for a dynamic UI.
   * **User Authentication**: Implement secure login and registration.
   * **Player Profiles**: Display detailed information for each batsman.
   * **Custom Filters**: Allow users to filter by playing ground, team, and bowler.
2. **Backend**:
   * **Node.js/Express**: Set up the server using Express.js.
   * **MongoDB**: Store player profiles and performance data.
   * **RESTful API**: Handle CRUD operations for player stats.
3. **Player Data**:
   * Collect historical data for all IPL batsmen.
   * Include match details, scores, and playing conditions.

### **Advanced Features:**

1. **Ground-wise Performance**:
   * Show batting averages and strike rates for each playing ground.
   * Highlight preferred venues for each batsman.
2. **Maximum Scores**:
   * Display highest individual scores for each batsman.
   * Include details of the match and opponent.
3. **Performance Against Specific Bowlers**:
   * Analyze how batsmen perform against particular bowlers.
   * Identify their strengths and weaknesses.

### **Evaluation Criteria:**

1. **Accuracy of Stats**:
   * Verify that player profiles and performance data are accurate.
   * Test against known match records.
2. **User Experience**:
   * Gather feedback on ease of use and relevance of insights.
   * Optimize the app for user engagement.

**Project - 9**

**Matchmaker app**

**Objective:**

The objective of this project is to develop a comprehensive dating website using the MERN stack (MongoDB, Express.js, React.js, Node.js) to facilitate meaningful connections between individuals. LoveLink aims to provide users with a secure and user-friendly platform to discover potential partners, interact, and build relationships.

**Features List:**

1. User Registration and Profile Creation:
   * Allow users to register accounts and create detailed profiles with personal information, photos, and preferences.
   * Provide options to customize profile settings, privacy preferences, and relationship goals.
2. Matchmaking Algorithm:
   * Implement a sophisticated matchmaking algorithm to suggest potential matches based on compatibility scores, interests, and preferences.
   * Display matched profiles with detailed compatibility metrics and common interests.
3. Messaging System:
   * Enable users to initiate conversations with their matches through a real-time messaging system.
   * Support multimedia messaging with text, images, and emojis.
4. Profile Browsing and Search:
   * Allow users to browse through profiles based on various filters such as age, location, interests, and relationship status.
   * Implement advanced search functionality with keyword search, location-based search, and advanced filters.
5. Privacy and Security:
   * Ensure user data privacy and security with robust authentication mechanisms, data encryption, and privacy settings.
   * Provide options for users to control visibility of their profiles and manage interaction preferences.

**Data Visualization Tools:**

1. User Interaction Analytics:

· Utilize interactive charts and graphs to visualize user interaction patterns, messaging frequency, and user engagement metrics.

· Present insights on user activity, such as login frequency, profile views, and message response rates.

2. Matchmaking Performance Metrics:

· Display visual representations of matchmaking success rates, match quality, and user satisfaction metrics.

· Provide comparative analysis of matches based on compatibility scores and user feedback.

**Advanced Features:**

1. Video Calling Integration:

· Integrate video calling functionality for users to have virtual dates and face-to-face interactions within the platform.

· Enhance user engagement and connection-building through real-time video communication.

2. AI-Powered Recommendation Engine:

* Implement an AI-powered recommendation engine to suggest potential matches based on user behavior, preferences, and feedback.
* Continuously refine match suggestions based on user interactions and feedback.

**Evaluation Criteria:**

1. Functionality: Assess the application's ability to fulfill all specified requirements and provide a seamless user experience with robust matchmaking and messaging functionalities.

2. Code Quality: Evaluate the cleanliness, organization, and adherence to best practices of the codebase.

3. Performance: Analyze the application's responsiveness, scalability, and efficiency under various user loads and scenarios.

4. Security: Scrutinize the implementation of secure authentication mechanisms, data encryption, and protection against common security vulnerabilities.

5. Deployment: Verify successful deployment of the application to a hosting platform with proper configuration, scalability considerations, and monitoring mechanisms in place.

**Project - 10**

**Streamics - Streaming App**

**Objective:**

Develop a cutting-edge media streaming application using the MERN stack (MongoDB, Express.js, React.js, Node.js) to provide users with a seamless and immersive entertainment experience. Streamify aims to offer a vast library of music tracks, albums, and videos, coupled with personalized recommendations and social features for enhanced user engagement.

**Features List:**

1. User Authentication and Profile Creation:
   * Allow users to register accounts and create personalized profiles with preferences, favorite genres, and playlists.
   * Implement secure authentication mechanisms for user login and session management.
2. Content Library:
   * Curate a diverse collection of music tracks, albums, movies, TV shows, and podcasts from various genres and languages.
   * Enable users to explore and discover new content through browsing, searching, and genre-based recommendations.
3. Streaming and Playback:
   * Provide smooth and high-quality streaming of media content with adaptive bitrate streaming for optimized playback.
   * Support offline playback by allowing users to download content for offline viewing/listening.
4. Playlist Management:
   * Allow users to create, edit, and share custom playlists comprising their favorite songs, albums, or videos.
   * Implement collaborative playlist features for users to create and share playlists with friends.
5. Social Features:
   * Facilitate social interactions among users through features like following/followers, commenting, liking, and sharing.
   * Enable users to discover trending content and popular playlists created by other users.

**Data Visualization Tools:**

1. Content Consumption Analytics:

* Visualize user engagement metrics such as content views, playback duration, and favorite genres through interactive charts and graphs.
* Provide insights into popular content trends, user preferences, and audience demographics.

2. Recommendation Performance Metrics:

* + Display visual representations of recommendation effectiveness, user feedback, and content popularity.
  + Analyze the performance of recommendation algorithms in suggesting relevant content to users.

**Advanced Features☹these r optional (u may or may not implement)**

1. Personalized Recommendations:

Continuously refine recommendation models based on user interactions and feedback.

2. Live Streaming and Events:

* Integrate live streaming capabilities for broadcasting live events, concerts, and exclusive content to users.
* Enable users to discover and participate in live events, Q&A sessions, and virtual meetups within the platform.

**Evaluation Criteria:**

1. Functionality: Assess the application's ability to meet specified requirements and deliver a seamless media streaming experience with robust playback, playlist management, and social features.

2. Code Quality: Evaluate code cleanliness, structure, and adherence to best practices, ensuring maintainability and scalability.

3. Performance: Analyze application responsiveness, streaming performance, and scalability under varying user loads and network conditions.

4. Security: Review implementation of secure authentication, data encryption, and protection against common security vulnerabilities to safeguard user data and transactions.

5. Deployment: Verify successful deployment of the application to a hosting platform with proper configuration for scalability, reliability, and monitoring.

**Project -11**

**JobIt - A job Portal**

**Objective:**

Develop a comprehensive job portal application using the MERN stack (MongoDB, Express.js, React.js, Node.js) aimed at connecting job seekers with employers and streamlining the recruitment process. JobHub will leverage external APIs to enhance the platform's functionality, providing users with advanced features for job search, application management, and communication.

**Features List:**

1. User Authentication and Profile Management:

* Enable users to register accounts, create profiles, and manage personal details, qualifications, and job preferences.
* Implement secure authentication mechanisms for user login and profile access.

2.Job Listings and Search:

* + Allow employers to post job listings with details such as job title, description, requirements, and location.
  + Enable job seekers to search and filter job listings based on criteria such as job title, location, industry, and experience level.

1. Application Management:
   * Provide job seekers with tools to apply for jobs, track application status, and manage application documents (e.g., resumes, cover letters).
   * Allow employers to review and manage job applications, communicate with applicants, and schedule interviews.
2. Communication and Messaging:
   * Facilitate communication between employers and job seekers through messaging features, allowing for discussions about job opportunities, interview scheduling, and application updates.
   * Implement real-time notifications to keep users informed about new messages, application updates, and interview requests.
3. Candidate Screening and Assessment:
   * Integrate pre-screening and assessment tools to evaluate candidate qualifications, skills, and suitability for job roles.
   * Provide employers with assessment reports and analytics to aid in candidate selection and decision-making.

**Advanced Features:**

1. Integration with External APIs:
   * Integrate with job search engines (e.g., Indeed, Glassdoor) to fetch additional job listings and expand the platform's job database.
   * Utilize APIs for background checks, skill assessments, and reference checks to enhance candidate screening capabilities.

**Evaluation Criteria:**

1. Functionality: Evaluate the application's ability to fulfill job search, application management, and communication requirements for both job seekers and employers.
2. Code Quality: Assess code readability, modularity, and adherence to best practices for maintainability and scalability.
3. Performance: Analyze application responsiveness, speed, and reliability under varying user loads and network conditions.
4. Security: Review implementation of secure authentication, data encryption, and protection against common security vulnerabilities to ensure user data privacy and integrity.
5. API Integration: Evaluate the effectiveness of external API integration in enhancing the platform's functionality, data enrichment, and user experience.

**Project - 12**

**Connector - Full-Service Marketplace Platform with API Integration**

**Objective:**

Urbanize aims to develop a versatile service marketplace website using the MERN stack (MongoDB, Express.js, React.js, Node.js) that connects service providers with customers seeking various services. The objective is to create a user-friendly platform where users can discover, book, and review services across multiple categories. The project will leverage various APIs, including mapping and geolocation services, to enhance user experience and service accessibility.

**Features List:**

1. Service Categories and Listings:
   * Provide a wide range of service categories, including home services, professional services, wellness services, events planning, and more, to cater to diverse user needs.
   * Enable service providers to create detailed listings showcasing their expertise, qualifications, service offerings, pricing, availability, and customer reviews.
2. User Registration and Profiles:
   * Implement user registration and profile creation functionalities for both service providers and customers, allowing them to manage bookings, preferences, and communication settings.
   * Provide options for users to verify their identities, add profile photos, and build trust within the community through ratings and reviews.
3. Booking and Scheduling System:
   * Offer an intuitive booking and scheduling system that allows customers to browse available service slots, select preferred dates and times, and confirm bookings with service providers.
   * Enable service providers to manage their schedules, accept or decline bookings, and communicate with customers regarding appointment details and requirements.
4. Geolocation and Mapping Integration:
   * Integrate mapping and geolocation APIs such as Google Maps or Mapbox to enable users to search for nearby service providers, view service locations, and calculate travel distances and directions.
   * Display interactive maps within service listings, showing service coverage areas, service provider locations, and service availability based on user's current location.
5. Secure Payment Gateway:
   * Implement a secure payment gateway to facilitate seamless and secure transactions between customers and service providers, supporting various payment methods such as credit/debit cards, digital wallets, and online banking.

**Data Visualization Tools:**

1. Service Heatmaps:
   * Utilize mapping APIs to generate heatmaps visualizing service demand and availability across different regions, helping users identify popular service areas and opportunities for expansion.
2. Route Optimization:
   * Employ routing algorithms to optimize service provider routes for efficient travel and appointment scheduling, minimizing travel time and costs while maximizing service coverage and customer satisfaction.

**Advanced Features:**

1. Real-time Chat and Notifications:
   * Integrate real-time messaging functionality to enable instant communication between customers and service providers, facilitating appointment coordination, service inquiries, and support.

**Evaluation Criteria:**

1. Functionality: Evaluate the platform's functionality, including service listings, booking system, payment processing, mapping integration, and communication features, to ensure smooth user experience and service operations.
2. Code Quality: Assess the codebase for readability, maintainability, scalability, and adherence to coding standards and best practices, ensuring efficient development and future enhancements.
3. Performance: Analyze the platform's performance metrics, including page load times, booking processing times, API response times, and server uptime, to ensure optimal performance and reliability under varying user loads and scenarios.
4. Security: Review the implementation of security measures, including user authentication, data encryption, payment security, and protection against common security vulnerabilities, to safeguard user data and transactions.
5. User Experience: Evaluate the platform's user interface design, navigation flow, interactive features, and overall user experience to ensure usability, accessibility, and engagement for both service providers and customers.

**Project - 13**

**VR based Guide**

**Objective:**

VR TravelMate aims to develop an immersive virtual reality travel planning application using the MERN stack (MongoDB, Express.js, React.js, Node.js) to help users explore and plan their dream vacations in virtual reality. The objective is to create an innovative platform that allows users to virtually experience destinations, customize travel itineraries, and make informed decisions for their next adventure.

**Features List:**

1. Virtual Destination Exploration:
   * Provide a library of virtual reality destinations, including famous landmarks, cities, natural wonders, and tourist attractions.
   * Allow users to explore destinations in immersive 3D virtual reality environments, providing realistic experiences from the comfort of their homes.
2. Customizable Travel Itineraries:
   * Enable users to create personalized travel itineraries by selecting destinations, activities, accommodations, and transportation options.
   * Offer flexible itinerary customization tools, allowing users to adjust travel plans based on preferences, budget, and time constraints.
3. Interactive Destination Information:
   * Provide detailed information about each destination, including historical background, cultural significance, tourist attractions, local cuisine, and travel tips.
   * Implement interactive features such as virtual tours, 360-degree videos, and audio guides to enhance the user's virtual travel experience.

**Evaluation Criteria:**

1. Functionality: Evaluate the platform's functionality, including destination exploration, itinerary customization, booking integration, social sharing, and collaboration features.
2. Code Quality: Assess the codebase for readability, modularity, and adherence to coding standards to ensure maintainability and extensibility.
3. Performance: Analyze the platform's performance metrics, including loading times, rendering quality, and user interaction responsiveness, to ensure smooth and immersive virtual reality experiences.
4. Security: Review the implementation of security measures, including data encryption, user authentication, and access controls, to protect user privacy and prevent unauthorized access.
5. User Experience: Evaluate the platform's user interface design, navigation flow, and overall user experience to ensure usability, accessibility, and engagement in virtual reality environments.

**Project - 14**

**QuizHub - Interactive Quiz Hub with Leaderboards and API Integration**

**Objective:**

Quizify aims to develop an engaging quiz website using the MERN stack (MongoDB, Express.js, React.js, Node.js) that offers a wide range of quizzes across various categories. The objective is to provide users with an interactive platform to test their knowledge, compete with others, and discover interesting facts. The project will integrate external APIs to enrich the quiz database and enhance the user experience, including the implementation of leaderboards to showcase top performers.

**Features List:**

1. Diverse Quiz Categories:
   * Offer a diverse selection of quiz categories, including general knowledge, science, history, sports, entertainment, and more, to cater to different interests and preferences.
   * Allow users to browse and choose quizzes based on their preferred categories and difficulty levels.
2. User Registration and Profiles:
   * Implement user registration and profile creation functionalities, enabling users to track their quiz history, scores, and achievements.
   * Provide options for users to customize their profiles, set preferences, and participate in community activities.
3. Quiz Creation and Management:
   * Allow registered users to create and publish their quizzes on the platform, contributing to the quiz database and expanding the content library.
   * Provide intuitive quiz creation tools, including question editors, answer options, timers, and scoring systems, to empower users to design engaging quizzes.
4. Leaderboards and Competitions:
   * Display dynamic leaderboards showcasing top scorers and quiz champions across different categories and difficulty levels to foster healthy competition.
   * Organize regular quiz competitions, challenges, and events with prizes and rewards to encourage user participation and engagement.
5. Social Sharing and Collaboration:
   * Integrate social sharing features to enable users to share their quiz results, achievements, and favorite quizzes with friends and followers on social media platforms.
   * Facilitate collaboration and interaction among users through discussion forums, comments, and feedback mechanisms for each quiz.

**Data Visualization Tools:**

1. Quiz Category Analytics:
   * Utilize data visualization techniques to analyze quiz category popularity, user engagement, and performance trends, helping administrators identify trending topics and optimize content strategy.
2. User Progress Tracking:
   * Provide interactive dashboards and progress trackers for users to monitor their quiz performance, track progress, and set goals for improvement over time.

**Project - 15**

**E-HUB: Esports Competition Hub with Cash Prizes**

**Objective:**

Esports Arena aims to develop a comprehensive online platform using the MERN stack (MongoDB, Express.js, React.js, Node.js) dedicated to organizing and hosting esports competitions across various gaming titles. The objective is to create an engaging and competitive environment for gamers to participate in tournaments, win prize pools, and showcase their skills to a global audience.

**Features List:**

1. Tournament Creation and Management:
   * Provide tools for tournament organizers to create and customize esports competitions, including setting game rules, tournament formats, schedules, and prize pools.
   * Enable tournament organizers to manage participant registrations, match schedules, bracket generation, and match results in real-time.
2. Player Registration and Profile Management:
   * Implement user registration and profile creation functionalities for players, allowing them to create personalized profiles, manage gaming preferences, and track tournament participation and achievements.
   * Provide options for players to link gaming accounts, verify identities, and showcase their gaming statistics and accolades.
3. Match Streaming and Spectating:
   * Integrate live streaming capabilities to broadcast tournament matches in real-time, allowing players, spectators, and fans to watch competitions, cheer for their favorite teams, and engage with the gaming community.
   * Offer interactive features such as live chat, match commentary, and viewer polls to enhance the viewing experience and promote audience engagement.
4. Prize Pool Management and Distribution:
   * Facilitate the management and distribution of prize pools for esports tournaments, including entry fees, sponsorships, and crowdfunding contributions.
   * Implement secure payment processing and prize distribution mechanisms to ensure timely and fair payouts to tournament winners.
5. Matchmaking and Ranking Systems:
   * Develop matchmaking algorithms to pair players and teams of similar skill levels for fair and competitive gameplay experiences.
   * Implement ranking systems and leaderboards to track player performance, calculate skill ratings, and recognize top-performing players and teams across different gaming titles.

**Data Visualization Tools:**

1. Tournament Analytics Dashboard:
   * Provide tournament organizers with an analytics dashboard displaying key performance metrics, including participant demographics, match statistics, viewer engagement metrics, and revenue generation insights.
   * Utilize data visualization techniques such as charts, graphs, and heatmaps to present tournament data in an intuitive and actionable format.
2. Prize Pool Distribution Visualizations:
   * Visualize prize pool distributions and payouts across different tournaments, highlighting top winners, prize allocations, and payout timelines to promote transparency and accountability.

**Advanced Features:**

1. Esports Betting and Wagering:
   * Integrate esports betting and wagering functionalities, allowing spectators and fans to place bets on tournament matches and outcomes, with potential winnings distributed from the prize pool.
2. Automated Tournament Administration:
   * Implement automated tournament administration features, such as match scheduling, result validation, and bracket updates, to streamline tournament operations and reduce manual overhead for organizers.

**Evaluation Criteria:**

1. Functionality: Evaluate the platform's functionality, including tournament creation, player registration, match streaming, prize pool management, matchmaking, and ranking systems, to ensure seamless tournament experiences for players and organizers.
2. Code Quality: Assess the codebase for modularity, scalability, readability, and adherence to coding standards and best practices, ensuring efficient development and maintenance of the platform.
3. Performance: Analyze the platform's performance metrics, including server response times, match streaming quality, payment processing speeds, and tournament registration throughput, to ensure optimal performance and scalability under varying user loads and network conditions.
4. Security: Review the implementation of security measures, including user authentication, data encryption, payment security, and protection against cheating, hacking, and fraudulent activities, to safeguard user data, transactions, and tournament integrity.
5. User Experience: Evaluate the platform's user interface design, navigation flow, interactive features, and overall user experience to ensure usability, accessibility, and engagement for players, spectators, and tournament organizers.

**PROJECT - 16**

**Generate question paper with important and super important tags**

**Objective:**

Develop a website that creates customized tests based on students’ notes, helping students study more efficiently and measure their learning progress. The website should allow users to upload/submit their notes, and they should get a set of fill-in-the-blank type questions based on those notes, which they can attempt.

**Deliverables:**

- A functional and responsive web application.

- An interactive UI for note uploads, giving tests

- A dashboard for displaying results and statistics

**Core Features:**

**1.** **Notes Extraction from PDF**:

- Extract text from uploaded PDF of notes using optical character recognition.

**2. Question generation**

- Integrate machine learning or other techniques to generate fill-in-the-blank type questions(optional)

**3. Attempt timed tests**

- Allow users to attempt timed tests to measure information retention

**4. Results dashboard**

- Display test results, and statistics like averages and improvement via a dashboard

**5. Expose API endpoints**

- Expose API routes to allow users to programmatically retrieve test questions

**PROJECT - 17**

**University recommender based on prompt / marks**

**Objective:**

Develop a website that helps engineering aspirants pick a college. Students can enter their preferred locations/distance, fee range, available courses, rank and more and the website will show them a list of colleges matching those criteria.

**Deliverables:**

- A functional and responsive web application.

- An interactive UI for filter selection, entering inputs and parameters

- A results page showing a list of all matching colleges

**Core Features:**

**1.** **Input collection and validation**

- Collect inputs from the user in various formats such as filters, parameters, ranges, lists etc.

**2. Matching colleges list generation**

- Scan the dataset for matching colleges and display them along with relevant information to the user

**3. Data visualisation**

- Show how the matching colleges compare against each other in terms of fee, courses, estimated rank requirements etc. graphically

**4. Map**

- Show a map of matching colleges and also top nearby colleges

**6. Expose API endpoints**

- Expose API routes to allow users to programmatically get matching colleges

**PROJECT - 18**

**Melody Preferences Explorer**

**Objective:**

Develop a website that allows users to explore what kinds of music is popular in different places. Users should be able to click anywhere on a world map, or take a quiz, or just choose any location randomly, and be presented with the top music people of that location listen to currently, and in previous years, along with details about that location’s favorite genre, artist and more. Users should be able to listen to the music as well, and be able to place multiple pins on the map.

**Core Features:**

**1.** **Interactive map**

- Users should be able to place pins on the map and select locations whose music they wish to explore

- An option to go to a random location on the map should be provided as well

**2. Quiz**

- Users be able to take a quiz that matches them to a location based on their answers

**3. Play music**

- The app should let users play any music that comes up as a result

**4. Timeline exploration**

- Users should be able to explore the popular music and genres from previous years in a location as well

**6. Comparison**

- Allow comparative play of music popular in different locations

**PROJECT - 19**

**Task Management Assistant**

**Objective:**

Develop a web extension that prevents users from procrastinating. Users can tell it what they’re studying, and the website uses user data taken fromm user to determine whether any website the user visits is related to that study or not, and if it is unrelated it does not allow the user to visit that site. Users can also manually block sites.

**Core Features:**

**1.** **Get and store the user’s study topic**

- The user should be able to describe their topic of study and the app should store it intelligently for future use

**2. Determine whether a website is related to study topics or not**

- Apply ML algorithms to determine the relation to study topics or not

**3. Block unrelated websites**

- Unrelated websites should be blocked

**4. Schedule breaks**

- Users should be able to schedule breaks where the blocking is invalid

**5. Emergency exits**

- Allow emergency exits from the blocking by supplying a very long keyword

**PROJECT - 20**

**Competitive Education Hub**

**Objective:**

Develop a website that motivates students to study more by turning studying into a competitive activity. The site allows users to add their friends, and compete with them on studying. Users can set timers when they start studying, which track their study time and topic. Friend-specific, college-specific as well as city-specific leaderboards are available which show rankings

**Core Features:**

**1.** **Account registration and authentication**

- Users should be able to register accounts and log into them

- Users should have a profile with all the relevant information and actions

- Security measures should be taken to ensure no user data is accessible to other users

**2. Friends**

- Users should be able to add friends and send friend requests

**3. Study groups**

- Users should be able to create college study groups

**4. Events and topic sprints**

- Study groups and individual users should be able to start a topic-themed event for any duration.

- Other users can join an event and study that topic for the duration of the event

**5. Leaderboard**

- There should be leaderboards for friend circles, colleges, and more

**21 . Efficient Attendance System with Facial Recognition Technology**

**Objective:** Develop a attendance system using MERN stack to automatically mark students present or absent based on facial recognition.

**Deliverables:**

MERN stack application with user authentication and database integration.

Facial recognition model trained to identify students.

Real-time camera integration for attendance tracking.

Dashboard displaying attendance statistics and reports.

**Core Features:**

Facial recognition for automatic attendance.

Real-time updates of attendance status.

User-friendly dashboard for monitoring attendance.

Integration with existing student management systems.

**Advance Features and Evaluation Criteria:**

Accuracy of Facial Recognition: Achieve high accuracy in identifying students.

Scalability: Ensure the system can handle large volumes of students.

Security: Implement robust security measures to protect student data.

Customization: Allow customization for different classroom environments.

Analytics: Provide detailed analytics on attendance patterns and trends.

**22.MoodTracks**

**Objective**: Develop a music player that detects facial expressions to match users' moods with appropriate songs, enhancing their emotional experience.

**Deliverables:**

MERN stack application with user authentication and database integration.

Facial expression recognition model trained to detect moods.

Integration with music streaming services.

Real-time adaptation of music playlists based on detected mood.

**Core Features:**

Facial expression analysis for mood detection.

Dynamic playlist generation based on mood.

User-friendly interface for browsing and playing music.

Seamless integration with popular music platforms.

**Advance Features and Evaluation Criteria:**

Accuracy of Mood Detection: Ensure precise recognition of facial expressions.

Personalization: Ability to learn and adapt to individual preferences.

Music Recommendation: Provide intelligent song recommendations based on mood.

Real-time Feedback: Instantly adjust music based on detected mood changes.

User Engagement: Measure user satisfaction and engagement with the system.

**23. SmartGrade**

**Objective**: Create a grading system using the MERN stack to automate grading processes, ensuring rapid and uniform feedback for student assessments.

**Deliverables:**

MERN stack application with user authentication and database integration.

AI algorithms for analyzing student submissions and providing grading feedback.

User-friendly interface for both students and teachers to access grades and feedback.

Integration with learning management systems for seamless assignment submission and grading.

**Stack Contributions:**

* MongoDB: Data storage for user accounts, assignments, and grading records.
* Express.js: Backend server for handling API requests, grading logic, and authentication.
* React.js: Frontend interface for users to submit assignments, view grades, and receive feedback.
* Node.js: Backend environment for running grading algorithms and serving frontend assets.

**Core Features:**

Automated Grading: AI-powered algorithms to evaluate assignments and exams.

Fast Feedback: Instant feedback for students upon submission.

Consistency: Ensuring uniform grading standards across all submissions.

User Roles: Distinct interfaces for students to submit work and teachers to view grades.

Scalability: Ability to handle large volumes of submissions and users.

**Advanced Feature and Evaluation Criteria:**

Natural Language Processing (NLP): Evaluate written assignments for grammar, clarity, and content relevance.

Feedback Customization: Allow teachers to customize feedback templates based on assignment criteria.

Plagiarism Detection: Integrate plagiarism detection tools to ensure academic integrity.

Performance Metrics: Measure system accuracy, grading speed, and user satisfaction through feedback surveys.

Adaptive Learning: Analyze grading data to provide personalized learning recommendations for students.

**24.FraudMonitor**

Objective: Develop a fraud detection system using the MERN stack to analyze transaction data, safeguarding banking and credit card transactions from fraudulent activities.

Deliverables:

MERN stack application with user authentication and database integration.

AI algorithms for real-time analysis of transaction data to detect anomalies.

Dashboard for monitoring suspicious activities and managing alerts.

Integration with banking APIs for seamless data retrieval and processing.

Stack Contributions:

* MongoDB: Data storage for user accounts, transaction records, and alerts.
* Express.js: Backend server for handling API requests, AI model integration, and authentication.
* React.js: Frontend interface for users to view transaction history and alerts.
* Node.js: Backend environment for running AI models and serving frontend assets.

Core Features:

Real-time Monitoring: Continuous analysis of transaction data to detect anomalies.

Alert System: Automated alerts for suspicious transactions or patterns.

User Management: Secure user authentication and role-based access control.

Data Visualization: Graphical representation of transaction trends and fraud incidents.

**25. SummarAI**

**Objective**: Develop a text summarization tool to efficiently extract key information from large bodies of text, such as articles or research papers, enhancing readability and comprehension.

**Deliverables:**

AI text summarization model trained on MERN stack architecture.

User-friendly web interface for inputting text and viewing summaries.

Integration with external APIs for retrieving and processing text data.

Deployment on a scalable server infrastructure for real-time summarization.

**Requirements:**

* MERN stack application for front-end and back-end development.
* Natural Language Processing (NLP) libraries for text analysis.
* User authentication and session management for personalized usage.
* Database integration for storing summarized texts and user preferences.

**26 . MindSync - Group Brainstorming and Mapping Tool**

**Objective**: Develop a real-time collaborative tool using the MERN stack for creating, sharing, and organizing mind maps, facilitating brainstorming, creativity, and project planning among users.

**Deliverables:**

MERN stack application with user authentication and real-time collaboration features.

Intuitive interface for creating and editing interconnected nodes in mind maps.

Secure data storage and sharing capabilities to ensure user privacy.

Responsive design for seamless access across devices for enhanced collaboration.

**Requirements:**

* MongoDB for data storage and management.
* Express.js for handling server-side logic and API endpoints.
* React.js for building a dynamic and interactive user interface.
* Node.js for server-side scripting and runtime environment.

27. **CLEAN**

**Objective:** Develop a web-based dashboard using the MERN stack to monitor real-time environmental data, provide historical trends, forecasts, and alerts, and promote environmental awareness and sustainability through educational resources.

**Deliverables:**

MERN stack application with user-friendly dashboard interface for environmental data.

Integration with APIs or sensors for real-time data collection.

Visualization of air quality, water quality, and weather conditions.

Historical data analysis, trend visualization, and forecasting capabilities.

Alert system for abnormal environmental conditions.

Educational resources and tips for promoting environmental awareness and sustainability.

**Requirements:**

* MongoDB for storing environmental data.
* Express.js for handling server-side logic and API endpoints.
* React.js for building an interactive and dynamic user interface.
* Node.js for server-side scripting and runtime environment.
* Integration with APIs or sensors for collecting real-time environmental data.

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**28. polyLingua**

**Objective:**

Create a real-time language translation tool using AI for instant communication.

Allow users to input text or speech, translated across multiple languages.

Utilize WebSocket for seamless, real-time translation in the browser.

**Deliverables:**

React frontend interface enabling text and speech input.

Node.js backend integrating AI translation models.

WebSocket implementation for real-time communication.

User-friendly interface for multilingual instant translation.

**Requirements:**

Proficiency in React.js and Node.js.

Access to AI-powered language translation APIs.

Familiarity with WebSocket technology for real-time communication.

Ability to handle text and speech inputs for translation.

**PROJECT - 29**

**Customized PPT / TEST generator from notes**

**Objective:**

Develop a website that creates customized tests based on students’ notes, helping students study more efficiently and measure their learning progress. The website should allow users to upload/submit their notes, and they should get a set of fill-in-the-blank type questions based on those notes, which they can attempt.

**Deliverables:**

- A functional and responsive web application.

- An interactive UI for note uploads, giving tests

- A dashboard for displaying results and statistics

**Core Features:**

**1.** **Notes Extraction from PDF**:

- Extract text from uploaded PDF of notes using optical character recognition.

**2. Attempt timed tests**

- Allow users to attempt timed tests to measure information retention

**3. Results dashboard**

- Display test results, and statistics like averages and improvement via a dashboard

**4. Expose API endpoints**

- Expose API routes to allow users to programmatically retrieve test questions

**PROJECT - 29**

**College picker and recommender**

**Objective:**

Develop a website that helps engineering aspirants pick a college. Students can enter their preferred locations/distance, fee range, available courses, rank and more and the website will show them a list of colleges matching those criteria.

**Deliverables:**

- A functional and responsive web application.

- An interactive UI for filter selection, entering inputs and parameters

- A results page showing a list of all matching colleges

**Core Features:**

**1.** **Input collection and validation**

- Collect inputs from the user in various formats such as filters, parameters, ranges, lists etc.

**2. Matching colleges list generation**

- Scan the dataset for matching colleges and display them along with relevant information to the user

**3. Data visualisation**

- Show how the matching colleges compare against each other in terms of fee, courses, estimated rank requirements etc. graphically

**4. Map**

- Show a map of matching colleges and also top nearby colleges

**6. Expose API endpoints**

- Expose API routes to allow users to programmatically get matching colleges

**PROJECT - 30**

**Recommend music based on prompt**

**Objective:**

Develop a website that allows users to explore what kinds of music is popular in different places. Users should be able to click anywhere on a world map, or take a quiz, or just choose any location randomly, and be presented with the top music people of that location listen to currently, and in previous years, along with details about that location’s favorite genre, artist and more. Users should be able to listen to the music as well, and be able to place multiple pins on the map.

**Core Features:**

**1.** **Interactive map**

- Users should be able to place pins on the map and select locations whose music they wish to explore

- An option to go to a random location on the map should be provided as well

**2. Quiz**

- Users be able to take a quiz that matches them to a location based on their answers

**3. Play music**

- The app should let users play any music that comes up as a result

**4. Timeline exploration**

- Users should be able to explore the popular music and genres from previous years in a location as well

**6. Comparison**

- Allow comparative play of music popular in different locations

**PROJECT - 31**

**Focus Boost Tool**

**Objective:**

Develop a web extension that prevents users from procrastinating. Users can tell it what they’re studying, and the website uses data to determine whether any website the user visits is related to that study or not, and if it is unrelated it does not allow the user to visit that site. Users can also manually block sites.

**Core Features:**

**1.** **Get and store user’s study topic**

- The user should be able to describe their topic of study and the app should store it intelligently for future use

**2. Determine whether a website is related to study topics or not**

- Apply ML algorithms to determine relation to study topics or not

**3. Block unrelated websites**

- Unrelated websites should be blocked

**4. Schedule breaks**

- Users should be able to schedule breaks where the blocking is invalid

**5. Emergency exits**

- Allow emergency exits from the blocking by supplying a very long keyword

**PROJECT - 32**

**StudyRival - Learning Competition Website**

**Objective:**

Develop a website that motivates students to study more by turning studying into a competitive activity. The site allows users to add their friends, and compete with them on studying. Users can set timers when they start studying, which track their study time and topic. Friend-specific, college-specific as well as city-specific leaderboards are available which show rankings

**Core Features:**

**1.** **Account registration and authentication**

- Users should be able to register accounts and log into them

- Users should have a profile with all the relevant information and actions

- Security measures should be taken to ensure no user data is accessible to other users

**2. Friends**

- Users should be able to add friends and send friend requests

**3. Study groups**

- Users should be able to create college study groups

**4. Events and topic sprints**

- Study groups and individual users should be able to start a topic-themed event for any duration.

- Other users can join an event and study that topic for the duration of the event

**5. Leaderboard**

- There should be leaderboards for friend circles, colleges, and more

# **Project 33:**

# PropertyInsight - Real Estate Web Tool

**Project Statement:-** This project aims to build a modern real estate web app using the MERN stack (MongoDB, Express.js, React.js, and Node.js). It will offer a user-friendly interface for managing listings, creating user accounts, and exploring properties with advanced search filters, virtual tours, and agent contact options.

**1. Frontend:**

**Technology**: React.js with libraries like React Router for navigation, Material UI for component styling, and react-map-gl or Leaflet for map integration.

**Features:**

**1.1**  **Listing Management:**

§ Create and edit listings with detailed information like property type, location, price, amenities, and images.

§ Upload and manage multiple images for each listing.

§ Mark listings as featured or available.

§ Integrate social media sharing buttons for listings.

**1.2**  **User Accounts:**

§ User registration and login with secure authentication (e.g., JWT tokens).

§ User profiles with saved searches, favorite listings, and contact information.

§ Account settings for managing profile details and password.

**1.3**  **Property Search:**

§ Advanced search filters based on location, price range, property type, amenities, and other criteria.

§ Interactive map with markers showcasing available listings.

§ Detailed property pages with high-quality images, descriptions, and key features.

**1.4** **Virtual Tours:**

§ Integrate 360° virtual tours for immersive property viewing.

§ Agent Contact Forms:

§ Contact forms for users to directly reach out to listing agents.

**2. Backend:**

· **Technology:** Node.js with Express.js framework and MongoDB for data storage.

· **Features:**

**2.1**  **API Endpoints:**

§ Expose APIs for fetching and manipulating listing data.

§ APIs for user registration, login, and account management.

§ Search functionality based on user-provided filters.

**2.2** **Database Management:**

§ Store listing information, including images, in a structured format in MongoDB.

§ Manage user accounts and their saved searches, favorite listings, and contact information.

**2.3** **Security:**

§ Implement JWT token authentication for secure user access.

§ Validate user input and sanitize data to prevent security vulnerabilities.

**3. Learning Potential:**

· **Frontend Design:**

o Master React.js component creation and state management.

o Practice data visualization techniques with libraries like Chart.js.

o Implement user interface design principles for a clean and intuitive experience.

· **Fetching Data & Authentication:**

o Understand how to fetch data from backend APIs using React components.

o Implement user authentication with JWT tokens and secure API calls.

o Utilize Redux or Context API for state management across the application.

· **Hints & Tips:**

o Use libraries like react-slick or react-photo-gallery to create attractive image galleries for listings.

o Consider implementing Google Maps API for interactive map features and directions.

o Explore third-party services for virtual tour creation and integration.

o Develop unit tests for both frontend and backend components to ensure code quality and stability.

· **Additional Features:**

o Implement a messaging system for users to communicate with agents directly.

o Allow users to submit offers and manage bids on properties.

**Project 34: LeaseCentral**

**Problem Statement & Solution :**

In today’s fast-paced environment, individuals frequently require temporary access to a variety of products, furniture, vehicles, and everyday items. To address this need, a sophisticated and user-friendly platform is essential for streamlining the rental process across diverse categories. RentalHub is a comprehensive MERN stack application designed as a centralized solution for renting products, furniture, cars, and other daily essentials. The platform’s goal is to bridge the gap between owners looking to rent out their possessions and users seeking temporary access to these items

**Features:**

#### **1. User Authentication**

· **Feature:** Allow users to sign up, log in, and manage their profile.

· **Implementation:** Use JWT (JSON Web Tokens) for secure authentication. You can use bcrypt for password hashing.

#### **2. Product Listings**

· **Feature:** Users can view a list of available products/items for rent.

· **Implementation:** Create a MongoDB collection for products, and use Express.js to fetch and display the data.

#### **3. Product Details**

· **Feature:** Provide detailed information about each product, including images, description, rental terms, etc.

· **Implementation:** Use React.js to create a dynamic and responsive product details page.

#### **4. Rental Booking**

· **Feature:** Allow users to book a product for a specific duration.

· **Implementation:** Implement a booking system with a start and end date using MongoDB to store booking information.

#### **5. User Dashboard**

· **Feature**: Users can manage their bookings, view rental history, and update their profile.

· **Implementation:** Create a personalized dashboard for users using React.js.

#### **6. Search and Filters**

· **Feature**: Implement a search functionality and filters to help users find specific products.

· **Implementation:** Use MongoDB queries for efficient searching and filtering.

#### **7. Reviews and Ratings**

· **Feature:** Allow users to leave reviews and ratings for products.

· **Implementation:** Create a MongoDB collection for reviews and integrate it into the product details page.

#### **8. Payment Integration**

· **Feature:** Implement a secure payment system for renting products.

· **Implementation**: Use a payment gateway like Stripe or PayPal for processing payments.

#### **9. Notifications**

· **Feature:** Send email or in-app notifications for booking confirmations, reminders, etc.

· **Implementation:** Use a service like SendGrid for email notifications and implement in-app notifications using React.js.

#### **10. Admin Panel**

· **Feature:** Provide an admin panel to manage products, users, and bookings.

· **Implementation:** Create a separate admin interface using React.js and secure it with proper authentication.

#### **11. Responsive Design**

· **Feature:** Ensure the application is responsive and works well on various devices.

· **Implementation:** Use CSS frameworks like Bootstrap or Tailwind CSS for responsive design.

#### **12. Map Integration**

· **Feature:** Display the location of rental items on a map.

· **Implementation:** Use a mapping library like Mapbox or Google Maps API for integrating maps into the application.